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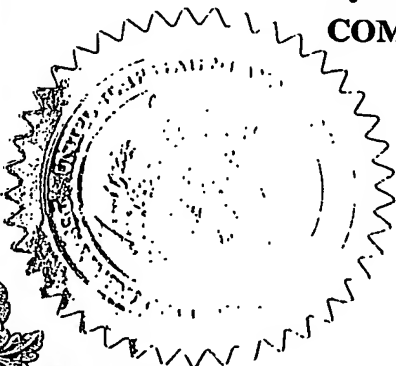
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FILING DATE UNDER 35 USC 111.**

APPLICATION NUMBER: 60/512,479**FILING DATE: October 17, 2003****PRIORITY
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Attorney Docket No. 069354.0105
Express Mail Label No. EV352395580US22264 U.S. PTO
60/512479

101703

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

INVENTOR(S)					
Given Name (first and middle (if any))	Family Name or Surname	Residence (City and either State or Foreign Country)			
Yu Zong	Chen	Singapore			
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<input type="checkbox"/> Additional inventors are being named on the ___ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (280 characters max)					
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ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages		20	<input type="checkbox"/> CD(s), Number		
<input checked="" type="checkbox"/> Drawing(s) Number of Sheets		10	<input checked="" type="checkbox"/> Other (specify)	Certificate of Mailing, Fee Transmittal, Check, and Postcard	
<input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.				FILING FEE AMOUNT (\$)	
<input checked="" type="checkbox"/> A check or money order is enclosed to cover the filing fees				80	
<input checked="" type="checkbox"/> Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account Number:		50-2158			
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The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input checked="" type="checkbox"/> No.					
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____					

Respectfully submitted,

SIGNATURE

TYPED or PRINTED NAME Michelle M. LeCointe

TELEPHONE 512.322.2580

Date: 10/17/03

REGISTRATION NO.
(if appropriate)
Docket Number:

46,681

069354.0105

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

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FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$ 80

Complete if Known

Application Number	Not Yet Assigned
Filing Date	October 17, 2003
First Named Inventor	Chen
Examiner Name	Not Yet Assigned
Group Art Unit	Not Yet Assigned
Attorney Docket No.	069354.0105

METHOD OF PAYMENT

1. ☐ The Commissioner is hereby authorized to charge. Indicated fees and credit any overpayments to:

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- ☒ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17
☐ Applicant claims small entity status. See 37 CFR 1.27

2. ☒ Payment Enclosed:

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee (\$)	Small Entity Fee (\$)	Fee Description	Fee Paid
740	370	Utility filing fee	
330	165	Design filing fee	
510	255	Plant filing fee	
740	370	Reissue filing fee	
160	80	Provisional filing fee	80

SUBTOTAL (1) (\$ 80

2. EXTRA CLAIM FEES

Total Claims 20 = 0 x = 0
Independent Claims 3 = 0 x = 0
Multiple Dependent =

Large Entity Fee (\$)	Small Entity Fee (\$)	Fee Description
18	9	Claims in excess of 20
84	42	Independent claims in excess of 3
280	140	Multiple dependent claim, if not paid
84	42	** Reissue independent claims over original patent
18	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$ 0

**or number previously paid, if greater. For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee (\$)	Small Entity Fee (\$)	Fee Description	Fee Paid
130	65	Surcharge - late filing fee or oath	
50	25	Surcharge - late provisional filing fee or cover sheet	
130	130	Non-English specification	
2,520	2,520	For filing a request for ex parte reexamination	
920*	920*	Requesting publication of SIR prior to Examiner action	
1,840*	1,840*	Requesting publication of SIR after Examiner action	
110	55	Extension for reply within first month	
400	200	Extension for reply within second month	
920	460	Extension for reply within third month	
1,440	720	Extension for reply within fourth month	
1,960	980	Extension for reply within fifth month	
320	160	Notice of Appeal	
320	160	Filing a brief in support of an appeal	
280	140	Request for oral hearing	
1,510	1,510	Petition to institute a public use proceeding	
110	55	Petition to revive - unavoidable	
1,280	640	Petition to revive - unintentional	
1,280	640	Utility issue fee (or reissue)	
480	230	Design issue fee	
620	310	Plant issue fee	
130	130	Petitions to the Commissioner	
50	50	Processing fee under 37 CFR 1.17(q)	
180	180	Submission of Information Disclosure Stmt	
40	40	Recording each patent assignment per property (times number of properties)	
740	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
740	370	For each additional invention to be examined (37 CFR § 1.129(b))	
740	370	Request for Continued Examination (RCE)	
800	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 0

SUBMITTED BY

Name (Print/Type) **Michelle M. LeCointe**

Signature _____

Registration No. (Attorney/Agent) **46,681**

Complete (if applicable)

Telephone **512.322.2580**

Date _____

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TITLE OF THE INVENTION: Method and Apparatus for Providing Information about Health and Medically Benefiting Effect and the Daily Consumption Quantity of Health or Medically Benefiting Foodstuffs, Botanicals and Herbal Products Needed to Produce Each Effect by Computer

Title

Method and apparatus for providing information about health and medically benefiting effect and the daily consumption quantity of health- or medically- benefiting foodstuffs, botanicals and herbal products needed to produce each effect by computer

Field Of The Invention

This invention relates to a method and apparatus for providing consumers, merchants, and manufacturers with information about specific health or medically benefiting effect and daily consumption quantity of foodstuffs, botanicals, or herbal products needed to produce each effect. An apparatus contemplated by this invention can be loaded and executed on one or more computers to enable consumers and merchants to access, distribute, display or export each health or medically benefiting effect and daily consumption quantity of one or more selected foodstuffs, botanicals, or herbal products needed to produce each effect. Weighing devices can be linked to a computer loaded with an apparatus contemplated by this invention so that, in addition to weighing, each device can display the information about whether or not the amount of a selected foodstuff, botanical, or herbal product is sufficient to produce a specific health- or medically-benefiting effect. This general field is known as "Food science" (FS), "Nutriology" (N), "Herbal medicine" (HM), "Alternative medicine" (AM), "Traditional medicine" (TM), "Traditional Chinese medicine" (TCM), "Traditional Indian medicine or Ayurveda" (TIM or A), and "Pharmacy" (P).

Background Of The Invention

The need for a method to automatically provide consumption quantity information for health- or medically-benefiting foodstuffs, botanicals and herbal products:

Many fruits, vegetables and other foodstuffs have been shown to contain chemicals with scientifically proven health-benefiting effects. Examples of these effects are (1) prevention of common cancers, cardiovascular diseases and heart diseases, (2) antioxidation and anti-aging, (3) maintaining prostate health, (4) stimulation of immune system, (5) decrease in platelet aggregation, (6) alteration in cholesterol metabolism, and (7) blood pressure reduction. These are described in "Botanicals in cancer chemoprevention", E.J. Park and J. M. Pezzuto, Cancer Metastasis Review 21, 231-255 (2002); "Vegetables, fruits and cancer prevention: a review", K. A. Steinmetz, and J. D. Potter, J. Am. Diet. Assoc. 96, 1027-1039 (1996); "Bioactive compounds in foods: their role in the prevention of cardiovascular disease and cancer", P. M. Kris-Etherton et. Al. Am. J. Med. 113 suppl 98, 71S-88S (2002); "Tomatoes and cardiovascular health", J. K. Wilcox, G. L. Catignani, S. Lazarus, Crit. Rev. Food Sci. Nutr. 43, 1-18 (2003); "Health effects of vegetable and fruits: assessing mechanisms of action in human experimental studies", J. W. Lampe, Am. J. Clin. Nutr. 70 suppl. 475S-490S (1999).

Non-prescription herbs and herbal products have also been used for therapeutic and health-promotion purposes by an increasing number of people in modern societies. For instance, 12% of the population in the United States used herbal medicine in 1990-1997. There are 1,500 to 1,800 herbal medications sold in the United States. Up to 1/3 of the populations in Europe are seeking some form of unorthodox care, in many cases herbal-based therapies and supplements, each year. These are described in "Trends in alternative medicine use in the United states, 1990-1997", D. M. Eisenberg et. al., J. Am. Med. Assoc. 280, 1569-1575 (1998); "Herbal medicines and preoperative care", M. K. A. Lee, J. Moss, and C. S. Yuan, J. Am. Med. Assoc. 286, 208-216 (2001); "Comments on complementary and alternative medicine in Europe" D. Reilly, J Altern Complement Med. 7 Suppl 1:S23-S31 (2001).

Medicinal herbs have long been widely used in traditional medicines across the world. In countries like China and India, traditional medicine is still widely used by a large portion of populations. These are described in "The new face of traditional Chinese medicine", D. Normile, Science 299, 188-190 (2003); "Traditional Chinese medicine: an approach to scientific proof and clinical validation", R. Yuan, and Y. Lin, Pharmacology and Therapeutics 86, 191-198 (2000); "Therapeutic plants of Ayurveda: a review of selected clinical and other studies for 166

species", S. Khan, and M. J. Balick, *J Altern Complement Med.* 7, 405-515 (2001); "Siddha medicine: an overview", B. V. Subbarayappa, *Lancet.* 350, 1841-1844 (1997); "American Indian medicine and contemporary health problems. II. Powerful medicinal plants in traditional Iroquois culture", J. W. Herrick, *N Y State J Med.* 78, 979-987 (1978); "Traditional African medicine: theory and pharmacology explored" *Trends Pharmacol Sci.* 20, 482-485 (1999).

The therapeutic effects of these herbs and herbal products are produced by their constituent phytochemicals. These are described in "Health effects of vegetable and fruits: assessing mechanisms of action in human experimental studies", J. W. Lampe, *Am. J. Clin. Nutr.* 70 suppl. 475S-490S (1999); "Herbal medicines and perioperative care", M. K. A. Lee, J. Moss, and C. S. Yuan, *J. Am. Med. Assoc.* 286, 208-216 (2001).

Recent statistics indicated that there is insufficient intake of specific fruits, vegetables, foodstuffs of other categories and botanicals in the general public. As a consequence, the expected health- or medically-benefiting effect of some of these foodstuffs and botanicals cannot be achieved. These are described in "More Americans are eating "5 a day" but intakes of dark green and cruciferous vegetables remain low", C. S. Johnston, C. A. Taylor, and J. S. Hampl, *J. Nutr.* 130, 3063-3067 (2000); "Fruit, vegetables, and cancer prevention: a review of the epidemiological evidence", G. Block, B. Patterson, and A. Subar, *Nutr. Cancer* 18, 1-29 (1992).

There is a lack of knowledge in the general populations about the specific health- or medically-benefiting effects and the required assumption quantity of most of the foodstuffs, botanicals, and some of the herbal products needed to produce each of these effects. For the minority of consumers who know the beneficial effect of specific foodstuff, botanical, or herbal product, they are often left with their own discretion about the consumption quantity. Without a convenient way to provide them with the information about the needed consumption quantity as well as the effects of the selected foodstuffs, botanicals or herbal products, consumers might either have insufficient intake without receiving the expected health- or medically-benefiting effect, or have too much intake which is economically and resourcefully wasteful. Because some foodstuffs, botanicals and herbal products contain certain levels of potentially toxic substances and harmful herb-drug interactions, there is an increased health risk at unnecessarily high consumption quantity. These are described in "Dietary supplements and functional foods: 2 sides of a coin?", C. H. Halsted, *Am. J. Clin. Nutr.* 77, suppl. 1001S-1007S (2003); "Safety evaluation of functional ingredients", C. L. Kruger and S. W. Mann, *Food Chem. Toxicol.* 41, 793-805 (2003).

Thus there is a need to provide, in a convenient manner, information about both the health- or medically-benefiting effect and the consumption quantity needed to achieve that effect for every health- or medically-benefiting foodstuff, botanical, and herbal product. Such information may be displayed along with other product information (such as price) on a normal display medium (such as price tag and brochure) in supermarkets, food stores, botanical stores, herbal product stores, drug stores and related manufacturers. Weighing devices that can enable consumers and merchants to know whether or not the amount of a selected foodstuff, botanical, or herbal product is sufficient to produce a specific effect also provides a convenient platform for selling, distributing, and purchasing health- and medically-benefiting foodstuffs, botanicals, and herbal products.

Feasibility of development of a method and apparatus to automatically provide consumption quantity information of fruits, vegetables, botanicals and herbal products:

Majority of supermarkets, food stores, botanical stores, herbal product stores, drug stores and related manufacturers have computer system to register their products and to display or generate product information (such as price) on certain information medium (such as price tag and brochure). These computer systems provide a convenient platform for loading and execution of a computer program and database for accessing, computing, distributing, displaying and printing the information about each health- or medically-benefiting effect and the daily consumption quantity of every health- or medically-benefiting fruit, vegetable; foodstuff of other category, botanical or herbal product and their combinations needed to produce that effect.

Weighing devices that have electronic display and are connected to a computer or network are widely used in many supermarkets, food stores, botanical stores, herbal product stores, drug stores and related manufacturers. These or modified versions of these weighing devices can be used to enable consumers and merchants to know directly from the electronic display panel about whether or not the amount of foodstuff, botanical, or herbal product on the device is sufficient to achieve a specific effect.

So far, no method is available for providing the information about both the health- and medically-benefiting effects and the required consumption quantity of health- and medically-benefiting foodstuffs, botanicals, and herbal products by a computer system. As discussed below, it is feasible to develop a method and apparatus to provide such information.

The health- or medically-benefiting effect of a foodstuff, botanical, or herbal product is produced by one or a group of biologically active chemicals contained in it. These are described in "Bioactive compounds in foods: their role in the prevention of cardiovascular disease and cancer", P. M. Kris-Etherton et. Al. *Am. J. Med.* 113 suppl 98, 71S-88S (2002); "Health effects of vegetable and fruits: assessing mechanisms of action in human experimental studies", J. W. Lampe, *Am. J. Clin. Nutr.* 70 suppl. 475S-490S (1999); "Herbal medicines and perioperative care", M. K. A. Lee, J. Moss, and C. S. Yuan, *J. Am. Med. Assoc.* 286, 208-216 (2001).

Consumption of sufficient dosage levels of these chemicals are required in order to achieve an expected health- or medically-benefiting effect. These are described in "The effect of red wine and its components on growth and proliferation of human oral squamous carcinoma cells", T. M. Elattar and A. S. Virji, *Anticancer Res.* 19, 5407-5414 (1999).

The quantity of each constituent biologically active chemical in a foodstuff, botanical, or herbal product can be experimentally measured and it is often given as the content (percentage weight of the chemical with respect to the total weight of the foodstuff, botanical, or herbal product). These are described in "Phenol antioxidant quantity and quality in foods: fruits", J. A. Vinson, X. Su, L. Zubik, and P. Bose, *J. Agric. Food Chem.* 49, 5315-5321; "Antioxidant and antiproliferative activities of common fruits", J. Sun, Y. F. Chu, X. Wu, and R. H. Liu, *J. Agric. Food Chem.* 50, 7449-7454 (2002); "Antioxidant and antiproliferative activities of common vegetables", Y. F. Chu, J. Sun, X. Wu, and R. H. Liu, *J. Agric. Food Chem.* 50, 6910-6916 (2002). Thus the consumption quantity of a foodstuff, botanical, or herbal product needed to produce a specific health- or medically-benefiting effect can be derived from the experimentally measured content of the related biological chemicals in the foodstuff, botanical, or herbal product by matching them with experimentally measured median effective dose of these chemicals.

The median effective dose of a large number of biologically active chemicals has been experimentally measured. A literature search of Medline and herbal medicine articles shows that there are more than 2,153 biologically active chemicals with median effective dose information. Examples of median effective dose information research are described in "Dose-response characteristics of uterine responses in rats exposed to estrogen agonists", H. A. Barton, M. E. Anderson, and B. C. Allen, *Regul Toxicol. Pharmacol.* 28, 133-149 (1998). Medline is described in "Database resources of the National Center for Biotechnology", D. L. Wheeler et. al., *Nucleic Acids Res.* 31, 28-33 (2003). Examples of median effective dose of medicinal herbal ingredients are described in "Handbook of composition and pharmacological action of commonly-used traditional Chinese medicine", K. T. Huang et. al. (1997).

The contents of constituent chemicals in a wide variety of fruits, vegetables, foodstuffs of other categories, botanicals, and herbal products have also been experimentally measured. For instance, phytochemical contents of over 50 fruits, 46 vegetables, and 2575 herbs and herbal products have been experimentally measured. These are described in "Phenol antioxidant quantity and quality in foods: fruits", J. A. Vinson, X. Su, L. Zubik, and P. Bose, *J. Agric. Food Chem.* 49, 5315-5321; "Antioxidant and antiproliferative activities of common fruits", J. Sun, Y. F. Chu, X. Wu, and R. H. Liu, *J. Agric. Food Chem.* 50, 7449-7454 (2002); "Antioxidant and

antiproliferative activities of common vegetables", Y. F. Chu, J. Sun, X. Wu, and R. H. Liu, J. Agric. Food Chem. 50, 6910-6916 (2002); "Five volatile compounds – a first comparative study", L. Grison-Pige, M. Hossaert-McKey, J. M. Greeff, J-M. Bessiere, Phytochemistry 61, 61-71 (2002); "Study on the composition of the volatile fraction of Hamamelis virginiana", R. Engel, M. Gutmann, C. Hartisch, H. Kolodziej, and A. Nahrstedt, Planta Medica 64, 251-258 (1998).

The availability of the experimentally measured median effective dose of a large number of bioactive chemicals and the contents of constituent chemicals in a wide variety of foodstuffs, botanicals, and herbal products makes it possible to develop method and apparatus for providing the information about each health- or medically- benefiting effect and the daily consumption quantity of health- and medically-benefiting foodstuffs, botanicals, herbal products, and their combinations needed to produce each effect by a computer system.

Objects Of The Invention

It is an object of this invention to provide a new method and apparatus for providing information about the health- or medically-benefiting effects and the daily consumption quantity of health- and medically-benefiting foodstuffs, botanicals, herbal products and their combinations needed to produce each effect by computer.

It is a further object of this invention to enable a user of the apparatus contemplated by this invention, upon a selection by the user of one or more foodstuffs/botanicals/herbal products, to view and distribute information regarding the health- or medically-benefiting effects and the daily consumption quantity of the selected foodstuff, botanical, herb or herbal product needed to produce each effect.

It is a further object of this invention to enable a user of the apparatus contemplated by this invention, upon using a weighing device that has an electronic display panel and is connected to a computer loaded with the apparatus of this invention, and upon selection of a foodstuff/botanical/herbal product, to know directly from the electronic display panel about whether or not the amount of foodstuff, botanical, or herbal product on the device is sufficient to produce a specific health- or medically-benefiting effect.

It is a further object of this invention to enable a user of the apparatus contemplated by this invention to obtain information about: (1) which of the user-selected multiple foodstuffs, botanicals, or herbal products is the one with the least daily consumption quantity needed to produce each effect; (2) which of the user-selected multiple foodstuffs, botanicals, or herbal products is the cheapest one; (3) daily consumption quantity of each foodstuff/botanical/herbal product if equal amount of all user-selected multiple foodstuffs, botanicals, and herbal products are to be taken in order to produce each effect.

It is a further object of this invention to enable a user of the apparatus contemplated by this invention, upon selection of a health- or medically-benefiting effect, to select, view and distribute information regarding the foodstuffs, botanicals, herbs and herbal products known to produce the selected effect and the daily consumption quantity needed to produce the selected effect.

It is a further object of this invention to provide a new method for computing the daily consumption quantity of each foodstuff/botanical/herbal product if more than one foodstuffs, botanicals, and herbal products are selected in order to produce a particular health- or medically-benefiting effect.

It is a further object of this invention to provide a new method for automatically generating a database of the health- or medically-benefiting effects and the daily consumption quantity of health- or medically-benefiting foodstuffs, botanicals and herbal products needed to achieve each effect from (1) a database of health- or medically-benefiting effects and the content of biologically active chemicals of foodstuffs, botanicals, herbs, and herbal products known to

produce each effect, (2) a database of median effective dose of biologically active chemicals in foodstuffs, botanicals and herbs.

In realizing this object of the present invention, in one embodiment, two databases are disclosed which contains data curated from literature search. One database is a database of biologically active ingredients and their contents in foodstuffs, botanicals, herbs and herbal products. Another database is a database of median effective dose of biologically active ingredients in foodstuffs, botanicals and herbs.

This invention relates to a method for providing the information about the health- or medically-benefiting effects and the daily consumption quantity of foodstuffs, botanicals, and herbal products needed to produce each effect by a computer system. The information about the health- or medically-benefiting effects and the daily consumption quantity of possible foodstuffs, botanicals and herbs and herbal products needed to produce each effect is organized in a database to permit ease of access to the information. More particularly, the information is organized within the database by groupings of foodstuffs, botanicals, herbs; herbal products by health- or medically-benefiting effect, plant or animal class or type, place of growth, season or time of collection or harvest. Information can be accessed from this database by selecting from a list or by typing (1) the name of a foodstuff/botanical/herb/herbal product, or (2) health- or medically-benefiting effect. Further selection of part of plant or animal, place of growth, season or time of collection or harvest is supported. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, its English common name, Latin name, indigenous name are provided. This database and its contained information can be given in different languages.

In a further aspect of this invention, methods are disclosed for enabling a weighing device to display information about whether or not the amount of a foodstuff, botanical, or herbal product on the device is sufficient to produce a selected health- or medically-benefiting effect.

In a further aspect of this invention, methods are disclosed for computer automated generation of the above described database from entries in two other databases (disclosed below) by the following procedure: (1) Selection of a foodstuff, botanical, herb, or herbal product. (2) Selection of the part of plant or animal. (3) Selection of place of growth. (4) Selection of season or time of collection or harvest. (5) Obtaining the health- or medically-benefiting effects and the contents of biologically active ingredients known to produce this effect from a database of experimentally measured health- or medically-benefiting effects and the content of the biologically active ingredients in foodstuffs, botanicals, herbs, and herbal products. (6) Obtaining the median effective dose of these biologically active ingredients from a database of effective dose of biologically active chemicals in foodstuffs, botanicals, and herbs. (7) Computation of daily consumption of the selected foodstuff, botanical, herb or herbal product needed to achieve each health- or medically-benefiting effect from the content and effective dose of its biologically active ingredients known to induce the effect.

In a further aspect of this invention, in one embodiment, experimentally measured health- or medically-benefiting effects and the content of the biologically active ingredients in foodstuffs, botanicals, herbs, and herbal products are collected and organized into a database. This database contains information about (1) experimentally determined health-effects, medically-benefiting effects, or therapeutic effects of health- medically-benefiting foodstuffs, botanicals, and herbal products; (2) known chemical ingredients and their contents in these foodstuffs, botanicals, herbs and herbal products, (3) CAS (chemical abstract service) number of these chemical ingredients, (4) chemical class and content of chemical class in these foodstuffs, botanicals, herbs and herbal products, (5) location of growth, collection time, post-collection processing status, methods of experimental analysis of these foodstuffs, botanicals, herbs and herbal products, (6) references of relevant scientific publications. Each piece of information in this database can be retrieved by selecting or typing the name of foodstuff/botanical/herb/herbal product, the health- or medically-benefiting effect, the name of a constituent chemical, the name of a chemical class, parts of plant or animal, and method of experimental analysis. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, search via plant English

common name, indigenous name, and Latin name are supported. To support the link with a database of effective dosage of biologically active chemicals, search of a chemical via the CAS number is supported.

In a further aspect of this invention, in one embodiment, experimentally measured median effective dose of biologically active chemicals in foodstuffs, botanicals, herbs and herbal products are collected and organized into a database. This database contains information about (1) the experimentally determined health- or medically-benefiting effects of chemicals in foodstuffs, botanicals, herbs and herbal products; (2) the experimentally determined median effective dose of the corresponding chemicals; (3) CAS (chemical abstract service) number of each of these chemicals; (4) list of plants and animals that contain each of these chemicals; (5) references of relevant scientific publications. Each information in this database can be accessed by typing or selecting (1) CAS number of a chemical, (2) name of a chemical, (3) name of plant or animal, (4) health- or medically-benefiting effect. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, search via plant English common name, indigenous name, and Latin name are supported.

Brief Description of the Drawings

- Figure 1 is a flow diagram that illustrates one embodiment of a process for providing individuals personally holding an apparatus of this invention with information about health- or medically-benefiting effect and daily consumption quantity of foodstuffs, botanicals, herbs and herbal products needed to achieve this effect.
- Figure 2 is a flow diagram that illustrates one embodiment of a process of using an apparatus of this invention owned by a merchant or manufacturer to provide consumers, merchants or manufacturers with information about (1) the health- or medically-benefiting effects and the daily consumption quantity of selected foodstuff, botanical, or herbal product needed to produce each effect; (2) the daily consumption quantity of each foodstuff, botanical, or herbal product needed to produce a selected effect.
- Figure 3 is a flow diagram that illustrates one embodiment of a process of using an apparatus of this invention to enable consumers, merchants or manufacturers to get from the display panel of the weighing device information about whether or not the amount of a foodstuff, botanical, or herbal product on the device is sufficient to produce a selected health- or medically-benefiting effect.
- Figure 4 is a flow diagram that illustrates one embodiment of a process for automatically generating a database of the health- or medically-benefiting effect and daily consumption quantity of foodstuffs, botanicals, herbs and herbal products needed to achieve this effect.
- Figure 5 illustrates the interface of the software, FBBC consultant, an apparatus contemplated by this invention.
- Figure 6 illustrates an example of the result of searching a vegetable "tomato" produced in Godollo, Hungary from the FBBC Consultant, an apparatus contemplated by this invention.
- Figure 7 illustrates the Interface of FBICD: a database of foodstuff and botanical ingredient and content, an apparatus contemplated by this invention
- Figure 8 illustrates an example of the result for searching an herb "ginkgo" from the FBICD database, an apparatus contemplated by this invention.

- Figure 9 illustrates the interface of EDC database, a database of effective dose of chemicals, an apparatus contemplated by this invention
- Figure 10 illustrates an example of the result for searching a chemical "cucurbitacin B" from the EDC database, an apparatus contemplated by this invention.

Summary Of The Invention

- A method and apparatus for providing information about the health- or medically-benefiting effects and the daily consumption quantity of selected foodstuffs, botanicals, herbal products and their combination needed to achieve each effect from a computer.
- A method to let consumers, merchants or manufacturers to obtain from a weighing device information about whether or not the amount of a foodstuff, botanical, or herbal product on the device is sufficient to produce a selected health- or medically-benefiting effect.
- A method for computing the daily consumption quantity of each foodstuff/botanical/herbal product if equal amount of more than one user-selected foodstuffs, botanicals, and herbal products are to be taken in order to produce a particular health- or medically-benefiting effect.
- A method for automatically generating a database of the health- or medically-benefiting effects and the daily consumption quantity of foodstuffs, botanicals, and herbal products needed to achieve each effect from two databases: (1) a database of health- or medically-benefiting effects and the content of biologically active chemicals of foodstuffs, botanicals, herbs, and herbal products known to produce each effect. (2) a database of median effective dose of biologically active chemicals in foodstuffs, botanicals and herbs.
- Disclosure of the construction and organization of a database of health- or medically-benefiting effects and the content of biologically active chemicals of foodstuffs, botanicals, and herbal products known to produce each effect.
- Disclosure of the construction and organization of a database of median effective dose of biologically active chemicals in foodstuffs, botanicals and herbal products.

Description Of The Preferred Embodiments - a detailed description of the preferred embodiments of the invention, making reference to various drawings; this section should describe what is believed to be the best mode of practicing the invention, and should be detailed enough for a person skilled in the art to construct the invention

This invention provides a method and apparatus to enable consumers, merchants and manufacturers to access, distribute, display or export information regarding the health or medically benefiting effects and the daily consumption quantity of one or more user-selected foodstuffs, botanicals, herbal products and their combinations needed for producing each effect. The relevant information can be retrieved via two search methods. One is the selection of one or more foodstuffs, botanicals, or herbal products. Another is the selection of one or more health- or medically-benefiting effects.

Overview

1. One embodiment of the invention is a method for using a database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, and herbal products needed to produce each effect to provide by computer the information regarding the health- or medically-benefiting effects and daily consumption quantity of selected foodstuffs, botanicals, herbs or herbal products. The said method includes the steps of:

- a) A database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, and herbal products needed to produce each effect is registered and maintained in one or more computer in a form organized to permit ease of access to the information.
- b) Two database loading options are provided. One is useful for merchants and manufacturers who wish to promote and sell their products. They can load the database described in a) by using their own list of foodstuffs, botanicals, and herbal products. In this case, the loaded database only contains foodstuffs, botanicals, and herbal products on the list. They also have the option to load the price of foodstuffs, botanicals, and herbal products on their list. The other is for individuals who wish to obtain general consumption guidance, they can directly load the database described in a).
- c) Upon user selection of one or more foodstuffs, botanicals, or herbal products, performing computer search of a loaded database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, and herbal products needed to produce each effect to retrieve information regarding to the health- or medically-benefiting effects and daily consumption quantity of the selected foodstuffs, botanicals, or herbal products needed to produce each effect.
- d) Upon user selection of one or more health- or medically-benefiting effects, performing computer search of a loaded database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, and herbal products needed to produce each effect to retrieve information regarding to the health- or medically-benefiting effects and daily consumption quantity of the selected foodstuffs, botanicals, or herbal products needed to produce each effect.
- e) If more than one foodstuffs, botanicals, or herbal products are selected, deriving the following information: (1) the foodstuff/botanical/herbal product with the least required daily consumption quantity; (2) optionally, if the price information is loaded by merchant or manufacturer, the foodstuff/botanical/herbal product of the cheapest price; (3) daily consumption quantity of each foodstuff/botanical/herbal product if equal amount of all these user-selected foodstuffs, botanicals, and herbal products are to be taken.
- f) Upon using a weighing device that has an electronic display panel and is connected to a computer, and upon selection of a foodstuff/botanical/herbal product, to compute and display whether or not the amount of foodstuff, botanical, or herbal product on the weighing device is sufficient to produce a specific health- or medically-benefiting effect.

Another embodiment of the invention is the disclosure of methods for automatically generating a database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, and herbal products needed to produce each effect. The said method includes the steps of:

- (a) A database of experimentally determined health- or medically-benefiting effects and the contents of biologically active chemicals in foodstuffs, botanicals, and herbal products known to produce each effects is registered and maintained in one or more computer in a form organized to permit ease of access to the information. Additional information in this database include: (1) CAS number of these chemical ingredients, (2) chemical class and content of chemical class in these foodstuffs, botanicals, herbs and herbal products, (3) location of growth, collection time, post-collection processing status, methods of experimental analysis of these foodstuffs, botanicals, herbs and herbal products, (4) references of relevant scientific publications. Each piece of information in this database can be retrieved by selecting or typing the name of foodstuff/botanical/herb/herbal product, the health- or medically-benefiting effect, the

name of a constituent chemical, the name of a chemical class, parts of plant or animal, and method of experimental analysis. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, search via plant English common name, indigenous name, and Latin name are supported. To support the link with a database of effective dosage of biologically active chemicals, search of a chemical via the CAS number is supported.

- (b) A database of experimentally determined measured median effective dose of biologically active chemicals in foodstuffs, botanicals, herbs and herbal products is registered and maintained in one or more computer in a form organized to permit ease of access to the information. Additional information in this include: (1) CAS number of each of these chemicals; (2) list of plants and animals that contain each of these chemicals, (3) references of relevant scientific publications. Each information in this database can be accessed by typing or selecting (1) CAS number of a chemical, (2) name of a chemical, (3) name of plant or animal, (4) health- or medically-benefiting effect. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, search via plant English common name, indigenous name, and Latin name are supported.
- (c) Given a selected foodstuff/botanical/herb/herbal product, retrieve from a database described in step (a) the information regarding (1) each health- or medically-benefiting effect of the selected foodstuff/botanical/herb/herbal product, (2) the CAS number and the content of every biologically active chemicals in the selected foodstuff/botanical/herb/herbal product known to produce the effect.
- (d) Using the CAS number of each biologically active chemical searched in step (c) to retrieve from a database described in step (b) the information regarding the effective dose of this chemical.
- (e) Computing the daily consumption quantity of the foodstuff/botanical/herb/herbal product, selected in step (c), needed to produce each health- or medically-benefiting effect obtained in step (c).
- (f) Create an entry of a database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbs or herbal products needed to produce each effect. Each entry contains: (1) the name of a foodstuff, botanical, herb, or herbal product; (2) each health- or medically-benefiting effect of foodstuff, botanical, herb, or herbal product; (3) part of plant or animal; (4) place of growth; (5) season or time of collection or harvest, (6) the name, CAS number and content of every biologically active chemicals in the foodstuff, botanical, herb, or herbal product known to produce each effect; (7) Latin name and indigenous name of the foodstuff, botanical, herb, or herbal product.

Another embodiment of the invention is the disclosure of the construction and organization of a database of health- or medically-benefiting effects and the content of biologically active chemicals of foodstuffs, botanicals, herbs, and herbal products known to produce each effect. This database is generated by literature search of information about (1) experimentally determined health-effects, medically-benefiting effects, or therapeutic effects of health-medically-benefiting foodstuffs, botanicals, herbs and herbal products; (2) known chemical ingredients and their contents in these foodstuffs, botanicals, herbs and herbal products, (3) CAS number of these chemical ingredients, (4) chemical class and content of chemical class in these foodstuffs, botanicals, herbs and herbal products, (5) location of growth, collection time, post-collection processing status, methods of experimental analysis of these foodstuffs, botanicals, herbs and herbal products, (6) references of relevant scientific publications. Each piece of information in this database can be retrieved by selecting or typing the name of foodstuff/botanical/herb/herbal product, the health- or medically-benefiting effect, the name of a constituent chemical, the name of a chemical class, parts of plant or animal, and method of experimental analysis. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, search via plant English common name, indigenous name, and Latin name are supported. To support the link with a database of effective dosage of biologically active chemicals, search of a chemical via the CAS number is supported.

Another embodiment of the invention is the disclosure of the construction and organization of a database of median effective dose of biologically active chemicals in foodstuffs, botanicals, herbs and herbal products. This database is generated by literature search of information about (1) the experimentally determined health- or medically-benefiting effects of chemicals in foodstuffs, botanicals, herbs and herbal products; (2) the experimentally determined median effective dose of the corresponding chemicals; (3) CAS number of each of these chemicals; (4) list of plants and animals that contain each of these chemicals. Each information in this database can be accessed by typing or selecting (1) CAS number of a chemical, (2) name of a chemical, (3) name of plant or animal, (4) health- or medically-benefiting effect. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, search via plant English common name, indigenous name, and Latin name are supported.

Program

Referring now to the drawings and, in particular, to Figure 1 and Figure 2, there is disclosed a process 100 for carrying out a method for providing health and medically benefiting effect and the daily consumption quantity of health- or medically- benefiting foodstuffs, botanicals, herbal products and their combinations needed to produce each effect by computer. Figure 1 describes process 100 for individuals personally holding an apparatus of this information. Figure 2 describes process 100 for users of an apparatus of this invention operated by a merchant or manufacturer.

Referring now to Figure 1, in which process 100 for individuals personally holding an apparatus of this information is described. In the process 100, information is obtained from a loaded database by the procedure as described below and given in the flow chart of Figure 1.

The process 100 begins either at a state 110 or at a state 150.

In the first case, the process 100 begins at a state 110, wherein the user select or type-in the name of a foodstuff, botanical, or herbal product.

The process 100 then moves to a state 120, wherein the selected name is used to search a database 130 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products). From the entries of database 130 that match the selected name of foodstuff, botanical, or herbal product, the information regarding to the health- or medically-benefiting effects and daily consumption quantity of the selected foodstuff, botanical or herbal product needed to produce each effect is obtained.

The process 100 then moves to a state 140, wherein the information regarding to the health- or medically-benefiting effects and daily consumption quantity of the selected foodstuff, botanical or herbal product is displayed, recorded and exported.

In the second case, the process 100 begins at a state 150, wherein the user select or type-in a health- or medically-benefiting effect.

The process 100 then moves to a state 160, wherein the selected effect is used to search a database 130 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products). From the entries of database 130 that match the selected effect, the information regarding to the foodstuffs, botanicals or herbal products known to produce the selected effect and their daily consumption quantity needed to produce the effect are obtained.

The process 100 then moves to a state 170, wherein the information regarding to the health- or medically-benefiting effect and daily consumption quantity of the selected foodstuff, botanical or herbal product is displayed, recorded and exported.

Referring now to Figure 2, in which process 100 for those using an apparatus of this invention owned by a merchant or manufacturer is described. In the process 100, information is obtained

from a loaded database and a merchant- or manufacturer-provided list of foodstuffs, botanicals, herbal products and their prices by the procedure as described below and given in the flow chart of Figure 2.

The process 100 begins at three separate states in three different cases. One, at a state 210, is the starting process for the merchant or manufacturer to load information. The other two cases, either at a state 110 or at a state 150, is one of the two separate starting steps for consumers, merchants and manufacturers to obtain information.

In the first case, the process 100 begins at a state 210, wherein the user select whether or not to load price of user-selected list of foodstuffs, botanicals, or herbal products.

If price is not to be loaded, then process 100 moves to a state 220, wherein a database 240 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products from merchant or manufacturer) is loaded from a database 215 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products) according to the list 225 (list of foodstuffs, botanicals, and herbal products provided by the merchant or manufacturer).

If price is to be loaded, then process 100 moves to a state 230, wherein a database 240 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products from merchant or manufacturer) and a price list 250 (price of foodstuffs, botanicals, herbal products from merchant or manufacturer) are loaded from a database 215 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products) and a list 235 (list of foodstuffs, botanicals, herbal products and price from merchant or manufacturer).

In the second case, the process 100 begins at a state 310, wherein the user select or type-in the name of a foodstuff, botanical, or herbal product.

The process 100 then moves to a state 320, wherein the selected name is used to search a database 240 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products from merchant or manufacturer). From the entries of database 240 that match the selected name of foodstuff, botanical, or herbal product, the information regarding to the health- or medically-benefiting effects and daily consumption quantity of the selected foodstuff, botanical or herbal product needed to produce each effect is obtained.

The process 100 then moves to a state 330, wherein it is asked whether price information is needed.

If price information is not needed, then process 100 moves to a state 350 described below.

If price information is needed, then process 100 moves to a state 340, wherein price of user selected foodstuffs, botanicals, herbal products is loaded from price list 250. Process 100 then moves to a state 350.

The process 100 at a state 350, wherein it is asked whether or not all the user-selected foodstuffs, botanicals, or herbal products are searched.

If not all the user-selected foodstuffs, botanicals, or herbal products are searched, then process 100 moves to a state 320 described above.

If all the user-selected foodstuffs, botanicals, or herbal products are searched, then process 100 moves to a state 360, wherein it is asked whether or not there is more than one user-selected foodstuffs, botanicals, or herbal products.

If there is no more than one user-selected foodstuffs, botanicals, or herbal products, then process 100 moves to a state 380 described below.

If there is more than one user-selected foodstuffs, botanicals, or herbal products, then process 100 moves to a state 370, wherein the following information is derived. The first is the foodstuff/botanical/herbal product with the least required daily consumption quantity. The second, as an option in case that the price information is loaded by merchant or manufacturer, is the foodstuff/botanical/herbal product of the cheapest price. The third is the daily consumption quantity of each foodstuff/botanical/herbal product if equal amount of all these user-selected foodstuffs, botanicals, and herbal products are to be taken. These are computed by the following formula:

Assuming that there are N foodstuffs/botanicals/herbal products selected by the user, DCQ_i and P_i is the daily consumption quantity (in units of g) and price of the i-th foodstuff/botanical/herbal product needed to produce a health- or medically-benefiting effect. $i=1, \dots, N$.

The foodstuff/botanical/herbal product with the least required daily consumption quantity is the one with smallest DCQ_i

The foodstuff/botanical/herbal product of the cheapest price is the one with smallest $DCQ_i \times P_i$

The daily consumption quantity DCQ of each foodstuff/botanical/herbal product if equal amount of all these user-selected foodstuffs, botanicals, and herbal products are to be taken is given by:

$$DCQ = 1 / \left[\sum_{\text{Sum of foodstuffs/botanicals/herbal products } (i=1, \dots, N)} 1 / DCQ_i \right] \quad \text{in units of g}$$

The process 100 then moves to a state 380.

The process 100 at a state 380, wherein the information regarding to the health- or medically-benefiting effects and daily consumption quantity of the selected foodstuffs, botanicals, herbal products and their combination is displayed, recorded and exported.

In the second case, the process 100 begins at a state 410, wherein the user select or type-in a health- or medically-benefiting effect.

The process 100 then moves to a state 420, wherein the selected effect is used to search a database 240 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products from merchant or manufacturer). From the entries of database 240 that match the selected effect, the information regarding to the foodstuffs, botanicals or herbal products known to produce the selected effect and their daily consumption quantity needed to produce the effect are obtained.

The process 100 then moves to a state 430, wherein it is asked whether price information is needed.

If price information is not needed, then process 100 moves to a state 450 described below.

If price information is needed, then process 100 moves to a state 440, wherein price of user selected foodstuffs, botanicals, herbal products is loaded from price list 250. Process 100 then moves to a state 450.

The process 100 at a state 450, wherein it is asked whether or not all of the user-selected health- or medically-benefiting effects are searched.

If not all the user-selected health- or medically-benefiting effects are searched, then process 100 moves to a state 420 described above.

If all the user-selected health- or medically-benefiting effects are searched, then process 100 moves to a state 460, wherein the information regarding to the health- or medically-benefiting effect and daily consumption quantity of the selected foodstuff, botanical or herbal product is displayed, recorded and exported.

The process 100 then moves to a state 470, wherein it is asked whether more than one foodstuffs, botanicals, or herbal products are to be selected.

If more than one selected foodstuffs, botanicals, or herbal products are to be selected, then process 100 moves to a state 480, wherein it computes the daily consumption quantity of each foodstuff/botanical/herbal product if equal amount of all these user-selected foodstuffs, botanicals, and herbal products are to be taken. This computation uses the same formula as that described in state 370.

The process 100 then moves to a state 490, wherein the information regarding to the health- or medically-benefiting effects and daily consumption quantity of the selected foodstuffs, botanicals, herbal products and their combination is displayed, recorded and exported.

Referring now to Figure 3, there is disclosed a process 500 for carrying out a method for enabling the use of a weighing device that has an electronic display panel and is connected to a computer to display information about whether or not a foodstuff, botanical, or herbal product on the device is sufficient to produce a particular health-, or medically-benefiting effect. In the process 500, information is obtained from a loaded database and a merchant- or manufacturer-provided list of foodstuffs, botanicals, herbal products and their prices by the procedure as described below and given in the flow chart of Figure 3.

The process 500 begins at two separate states in two different cases. One, at a state 510, is the starting process for the merchant or manufacturer to load information. The other case, at a state 610, is a starting step for consumers, merchants and manufacturers to use a weighing device to obtain information as well as to weigh a foodstuff, botanical, or herbal product.

In the first case, the process 500 begins at a state 510, wherein the user select whether or not to load price of user-selected list of foodstuffs, botanicals, or herbal products.

If price is not to be loaded, then process 500 moves to a state 520, wherein a database 540 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products from merchant or manufacturer) is loaded from a database 515 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products) according to the list 525 (list of foodstuffs, botanicals, and herbal products provided by the merchant or manufacturer).

If price is to be loaded, then process 500 moves to a state 530, wherein a database 540 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products from merchant or manufacturer) and a price list 550 (price of foodstuffs, botanicals, herbal products from merchant or manufacturer) are loaded from a database 515 (database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, herbal products) and a list 535 (list of foodstuffs, botanicals, herbal products and price from merchant or manufacturer).

In the second case, the process 500 begins at a state 610, wherein a foodstuff, botanical, or herbal product is put on an weighing device that has an electronic display and is connected to a computer loaded with the database 540 and 550.

The process 500 then moves to a state 615, wherein the user select, or type-in, or scan the barcode of, the name of the foodstuff, botanical, or herbal product on the weighing device.

The process 500 then moves to a state 620, wherein the selected name is used to search a database 540 (database of health- or medically-benefiting effects and daily consumption

quantity of foodstuffs, botanicals, herbal products from merchant or manufacturer). From the entries of database 540 that match the selected name of foodstuff, botanical, or herbal product, the information regarding to the health- or medically-benefiting effects and daily consumption quantity of the selected foodstuff, botanical or herbal product needed to produce each effect is obtained.

The process 500 then moves to a state 625, wherein it is asked whether price information is needed.

If price information is not needed, then process 500 moves to a state 635 described below.

If price information is needed, then process 500 moves to a state 630, wherein price of user selected foodstuffs, botanicals, herbal products is loaded from price list 550. Process 500 then moves to a state 635.

The process 500 at a state 635, where in the list of health- or medically-benefiting effects of foodstuff, botanical, or herbal product is displayed on the display panel of weighing device.

The process 500 then moves to a state 640, wherein it is asked to select a health- or medically-benefiting effect from the list provided in the state 635.

The process 500 then moves to a state 645, wherein it is asked to select or input the number of days for consumption of the foodstuff, botanical, or herbal product on the weighing device.

The process 500 then moves to a state 650, wherein the consumption quantity of the foodstuff, botanical, or herbal product for the number of days needed to produce the selected health- or medically-benefiting effect is computed by the following procedure:

Assuming that N and DCQ are number of days for consumption and daily consumption quantity (in units of g) of the foodstuff/botanical/herbal product needed to produce a health- or medically-benefiting effect, then the consumption quantity for the number of days is $CQ = N \times DCQ$.

Assuming that W is the weight of the foodstuff, botanical, or herbal product on the weighing device, the amount of foodstuff, botanical, or herbal product on the device is sufficient to produce the selected health- or medically-benefiting effect if $W/CQ \geq 1$. The amount is not sufficient if $W/CQ < 1$.

The process 500 then moves to a state 655, wherein the case that $W/CQ \geq 1$, the electronic display panel on the weighing device indicates that the amount of foodstuff, botanical, or herbal product on the device is sufficient to produce the selected health- or medically-benefiting effect. In the case that $W/CQ < 1$, the electronic display panel on the weighing device indicates that the amount of foodstuff, botanical, or herbal product on the device is insufficient to produce the selected health- or medically-benefiting effect.

The process 500 then moves to a state 660, wherein in the case that there are more than one health- or medically-benefiting effects of the foodstuff, botanicals, or herbal products, it is asked whether or not to select another effect.

If another effect is selected, then 500 moves to a state 640 described above.

If no other effect is selected, then process 500 moves to a state 670, wherein the process stops.

Referring now to Figure 4, there is disclosed a process 700 for carrying out a method for generating a database of health and medically benefiting effects and the daily consumption quantity of health- or medically- benefiting foodstuffs and botanicals and herbal products needed to produce each effect by computer. In the process 700, the database is generated by the procedure as described below and given in the flow chart of Figure 4.

The process 700 begins at a state 710, wherein a list of foodstuffs, botanicals and herbal products is given as an input file for generating the corresponding entries in the database.

The process 700 then moves to a state 720, wherein the name of each foodstuff, botanical or herbal product in the list provided in state 710 is obtained. Also obtained is the information regarding: (1) the part of plant or animal; (2) place of growth; (3) season or time of collection or harvest.

The process 700 then moves to a state 730, wherein the selected name of foodstuff, botanical, or herbal product, the part of plant or animal, place of growth, season or time of collection or harvest is used to search a database 725 (database of health- or medically-benefiting effects and the contents of biologically active chemicals in foodstuffs, botanicals, and herbal products) to obtain the following information about the foodstuff, botanical or herbal product: (1) the health- or medically-benefiting effects of the biologically active chemicals contained in the foodstuff, botanical, or herbal product; (2) the content of each chemical in the foodstuff, botanical, or herbal product; (3) the CAS (Chemical abstract service) number of each chemical.

Database 725 can be generated from literature search. It contains information regarding: (1) experimentally determined health-effects, medically-benefiting effects, or therapeutic effects of health- medically-benefiting foodstuffs, botanicals, herbs and herbal products; (2) known chemical ingredients and their contents in these foodstuffs, botanicals, herbs and herbal products, (3) CAS number of these chemical ingredients, (4) chemical class and content of chemical class in these foodstuffs, botanicals, herbs and herbal products, (5) location of growth, collection time, post-collection processing status, methods of experimental analysis of these foodstuffs, botanicals, herbs and herbal products, (6) references of relevant scientific publications. Each piece of information in this database can be retrieved by selecting or typing the name of foodstuff/botanical/herb/herbal product, the health- or medically-benefiting effect, the name of a constituent chemical, the name of a chemical class, parts of plant or animal, and method of experimental analysis. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, search via plant English common name, indigenous name, and Latin name are supported. To support the link with a database of effective dosage of biologically active chemicals, search of a chemical via the CAS number is supported.

The process 700 then moves to a state 740, wherein it is asked whether one or more chemicals are selected from database.

If no chemical is selected, then the process 700 moves to a state 810 described below.

If one or more chemicals are selected, then the process 700 moves to a state 750, wherein the CAS number or the name of each selected chemical is used to search a database 745 (Database of median effective dose of biologically active chemicals in foodstuffs, botanicals, and herbal products) to retrieve the information regarding to the median effective dose of the selected chemical.

Database 745 can be generated from literature search. It contains information regarding: (1) the experimentally determined health- or medically-benefiting effects of chemicals in foodstuffs, botanicals, herbs and herbal products; (2) the experimentally determined median effective dose of the corresponding chemicals; (3) CAS number of each of these chemicals; (4) list of plants and animals that contain each of these chemicals. Each information in this database can be accessed by typing or selecting (1) CAS number of a chemical, (2) name of a chemical, (3) name of plant or animal, (4) health- or medically-benefiting effect. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, search via plant English common name, indigenous name, and Latin name are supported.

The process 700 then moves to a state 760, wherein it is asked whether all of the selected chemicals have been searched.

If not all the selected chemicals have been searched, then the process 700 moves to a state 750 described above.

If all the selected chemicals have been searched, then the process 700 moves to a state 770, wherein these chemicals are divided into groups according to the health- or medically-benefiting effect, each group contains chemicals of the same health- or medically-benefiting effect.

The process 700 then moves to a state 780, wherein the daily consumption quantity of the selected foodstuff, botanical or herbal product needed to produce each health- or medically-benefiting effect is computed as follows:

Assuming that there are N chemicals contained in the selected foodstuff, botanical, or herbal product known to produce a health- or medically-benefiting effect. The content of each of these chemicals in the selected foodstuff, botanical, or herbal product can be represented by C_i in units of mg/g. The median effective dose of each of these chemicals can be represented by ED_i in units of mg. Here i is the index of the chemicals: $i=1, \dots, N$. The daily consumption quantity DCQ of the selected foodstuff, botanical, or herbal product needed to produce each health- or medically-benefiting effect can be given by:

$$DCQ = 1 / [\sum_{i=1, \dots, N} C_i / ED_i] \quad \text{in units of g}$$

The process 700 then moves to a state 790, wherein it is asked whether the daily consumption quantity for every health- and medically-benefiting effect has been computed.

If not all the daily consumption quantities are computed, then the process 700 moves to a state 780 described above.

If all the daily consumption quantities are computed, then the process 700 moves to a state 800, wherein an entry is created for the database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, and herbal products. This entry contains information regarding: (1) the name of a foodstuff, botanical, herb, or herbal product; (2) each health- or medically-benefiting effect of foodstuff, botanical, herb, or herbal product; (3) part of plant or animal; (4) place of growth; (5) season or time of collection or harvest, (6) the name, CAS number and content of every biologically active chemicals in the foodstuff, botanical, herb, or herbal product known to produce each effect; (7) Latin name and indigenous name of the foodstuff, botanical, herb, or herbal product.

The process 700 then moves to a state 810.

The process 700 at a state 810, wherein it is asked whether all the foodstuffs, botanicals, and herbal products in list 710 are processed.

If not all the foodstuffs, botanicals, and herbal products in list 710 are processed, then process 700 moves to a state 720 described above.

If all of the foodstuffs, botanicals, and herbal products in list 710 are processed, then process 700 moves to a state 720, wherein process 700 stops.

Illustrative Example 1: Retrieval of the daily consumption quantity of tomato needed to produce antioxidant effect from a software, FBBC consultant, an apparatus contemplated by this invention.

An apparatus contemplated by this invention, a software named as FBBC Consultant (Foodstuff Botanical Benefit Consumption Consultant), has been developed which provides information about the health- and medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, and herbal products needed to achieve each effect. FBBC currently contains information for 50 fruits, 46 vegetables, and 2575 herbs and herbal products. Effort is being

made to collect information for additional fruits, vegetables, foodstuffs of other classes, botanicals, and herbal products. The interface of FBBC is shown in Figure 5. From this interface, a user can search the information by (1) selecting or typing-in the name of a foodstuff, botanical, or herbal product; (2) selecting or typing-in the health- or medically-benefiting effect.

Figure 6 illustrates an example of the result for searching a vegetable "tomato" produced in Godollo, Hungary from the FBBC Consultant. Tomato is known to contain antioxidant ingredients and ingredients with cancer protection properties. These are described in "Change in carotenoids and antioxidant vitamins in tomato as a function of varietal and technological factors", A. A. Abushita, H. G. Daood, and P. A. Blacs, J. Agric. Food Chem. 48, 2075-2081 (2000); "Chemistry, distribution, and metabolism of tomato carotenoids and their impact on human health", F. Khachik et. al., Exp. Biol. Med. (Maywood), 227, 845-851 (2002).

Illustrative Example 2: Retrieval of the content of biologically active chemicals contained in a plant ginkgo from FBICD database, an apparatus contemplated by this invention.

An apparatus contemplated by this invention, FBICD, a database of foodstuff and botanical ingredient and content has been developed, which provides information about (1) experimentally determined health-effects, medically-benefiting effects, or therapeutic effects of health- medically-benefiting foodstuffs, botanicals, herbs and herbal products; (2) known chemical ingredients and their contents in these foodstuffs, botanicals, herbs and herbal products, (3) CAS number of these chemical ingredients, (4) chemical class and content of chemical class in these foodstuffs, botanicals, herbs and herbal products, (5) location of growth, collection time, post-collection processing status, methods of experimental analysis of these foodstuffs, botanicals, herbs and herbal products, (6) references of relevant scientific publications. FBICD currently contains information for 50 fruits, 46 vegetables, and 2575 herbs and herbal products. Effort is being made to collect information for additional fruits, vegetables, foodstuffs of other classes, botanicals, and herbal products.

The interface of FBICD is shown in Figure 7, from which information can be retrieved by selecting or typing the name of foodstuff/botanical/herb/herbal product, the health- or medically-benefiting effect, the name of a constituent chemical, the name of a chemical class, parts of plant or animal, and method of experimental analysis. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, search via plant English common name, indigenous name, and Latin name are supported. To support the link with a database of effective dosage of biologically active chemicals, search of a chemical via the CAS number is supported.

Figure 8 illustrates an example of the result for searching an herb "ginkgo" produced in Guang Dong province, China from the FBICD database. Ginkgo biloba is a dioecious tree with a history of use in traditional Chinese medicine. Although the seeds are most commonly employed in traditional Chinese medicine, in recent years standardized extracts of the leaves have been widely sold as a phytomedicine in Europe and as a dietary supplement in the United States. The primary active constituents of the leaves include flavonoid glycosides and unique diterpenes known as ginkgolides; the latter are potent inhibitors of platelet activating factor. Clinical studies have shown that ginkgo extracts exhibit therapeutic activity in a variety of disorders including Alzheimer's disease, failing memory, age-related dementias, poor cerebral and ocular blood flow, congestive symptoms of premenstrual syndrome, and the prevention of altitude sickness. Due in part to its potent antioxidant properties and ability to enhance peripheral and cerebral circulation, ginkgo's primary application lies in the treatment of cerebrovascular dysfunctions and peripheral vascular disorders. These are described in "Efficacy, safety, and use of ginkgo biloba in clinical and preclinical applications", D. J. Mckenna, K. Jones, and K. Hughes, Altern. Ther. Health Med., 7, 70-86, 88-90 (2001); "Ginkgo biloba extract: review of CNS effects", L. L. Ponto, and S. K. Schultz, Ann. Clin. Psychiatry 15, 109-119 (2003);

Illustrative Example 3: Retrieval of the median effective dose of a biologically active chemical cucurbitacin contained in towel gourd from EDC database, an apparatus contemplated by this invention.

An apparatus contemplated by this invention, EDC database, a database of effective dose of chemicals, has been developed, which provides information about experimentally determined measured median effective dose of biologically active chemicals in foodstuffs, botanicals, herbs and herbal products is registered registered and maintained in one or more computer in a form organized to permit ease of access to the information. Additional information in this include: (1) CAS number of each of these chemicals; (2) list of plants and animals that contain each of these chemicals, (3) references of relevant scientific publications. EDC currently contains information about effective dose of 2,153 biologically active chemicals.

The interface of EDC is shown in Figure 9, from which information can be retrieved by typing or selecting (1) CAS number of a chemical, (2) name of a chemical, (3) name of plant or animal source of chemical, (4) health- or medically-benefiting effect. To facilitate convenient search of a foodstuff/botanical/herb/herbal product, search via plant English common name, indigenous name, and Latin name are supported.

Figure 10 illustrates an example of the result for searching a chemical "cucurbitacin B" from the EDC database.

CLAIMS

- 1. The invention as described herein.**

ABSTRACT**Title**

Method and apparatus for providing information about health and medically
5 benefiting effect and the daily consumption quantity of health- or medically-
benefiting foodstuffs, botanicals and herbal products needed to produce each
effect by computer

This invention relates to a method and apparatus for providing consumers,
10 merchants, and manufacturers with information about specific health or medically
benefiting effect and daily consumption quantity of foodstuffs, botanicals, or herbal
products needed to produce each effect. An apparatus contemplated by this
invention can be loaded and executed on one or more computers to enable
consumers and merchants to access, distribute, display or export each health or
15 medically benefiting effect and daily consumption quantity of one or more selected
foodstuffs, botanicals, or herbal products needed to produce each effect. Weighing
devices can be linked to a computer loaded with an apparatus contemplated by
this invention so that, in addition to weighing, each device can display the
information about whether or not the amount of a selected foodstuff, botanical, or
20 herbal product is sufficient to produce a specific health- or medically-benefiting
effect.

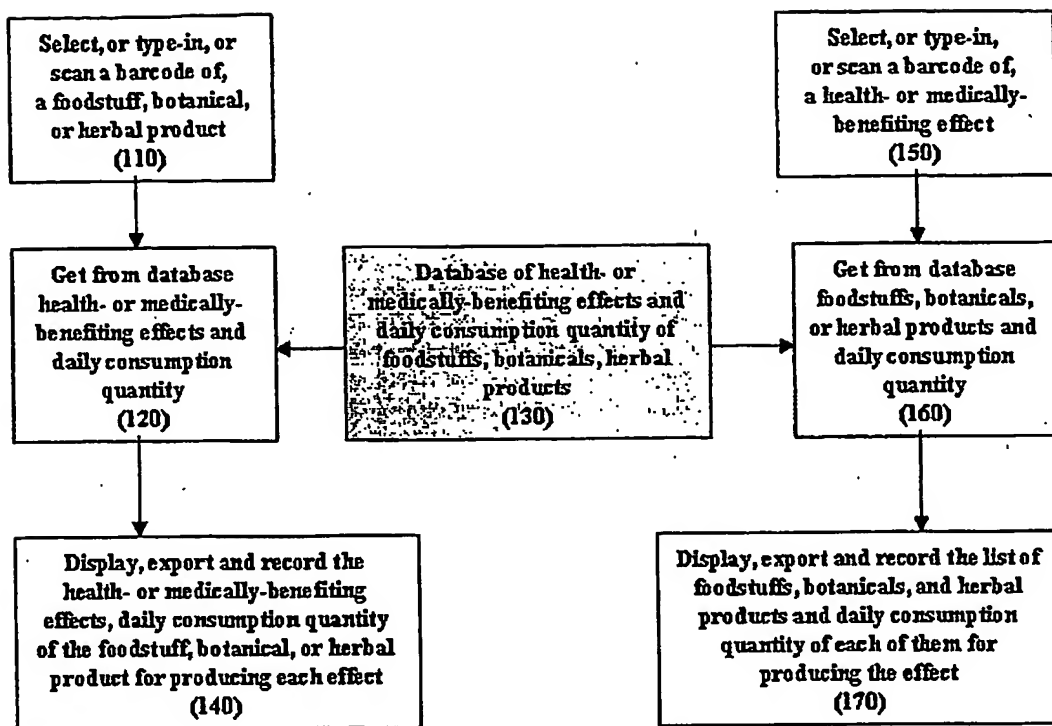


Figure 1. Flow Chart of a process of providing individuals personally holding an apparatus of this invention with information about (1) the health- or medically-benefiting effects and the daily consumption quantity of selected foodstuff, botanical, or herbal product needed to produce each effect; (2) the daily consumption quantity of each foodstuff, botanical, or herbal product needed to produce a selected effect.

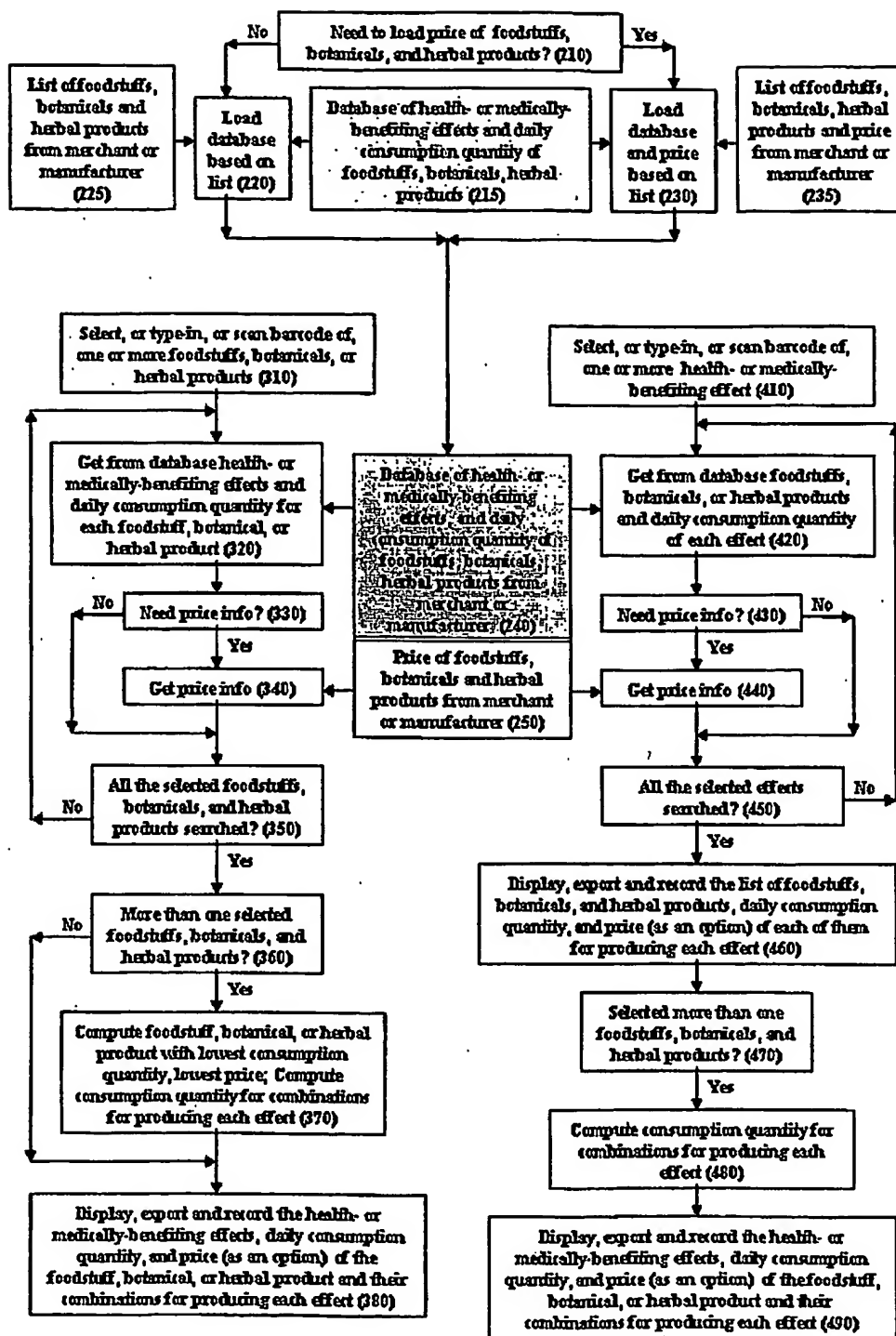


Figure 2. Flow Chart of a process of using an apparatus of this invention owned by a merchant or manufacturer to provide consumers, merchants or manufacturers with information about (1) the health- or medically-benefiting effects and the daily consumption quantity of selected foodstuff, botanical, or herbal product needed to produce each effect; (2) the daily consumption quantity of each foodstuff, botanical, or herbal product needed to produce a selected effect.

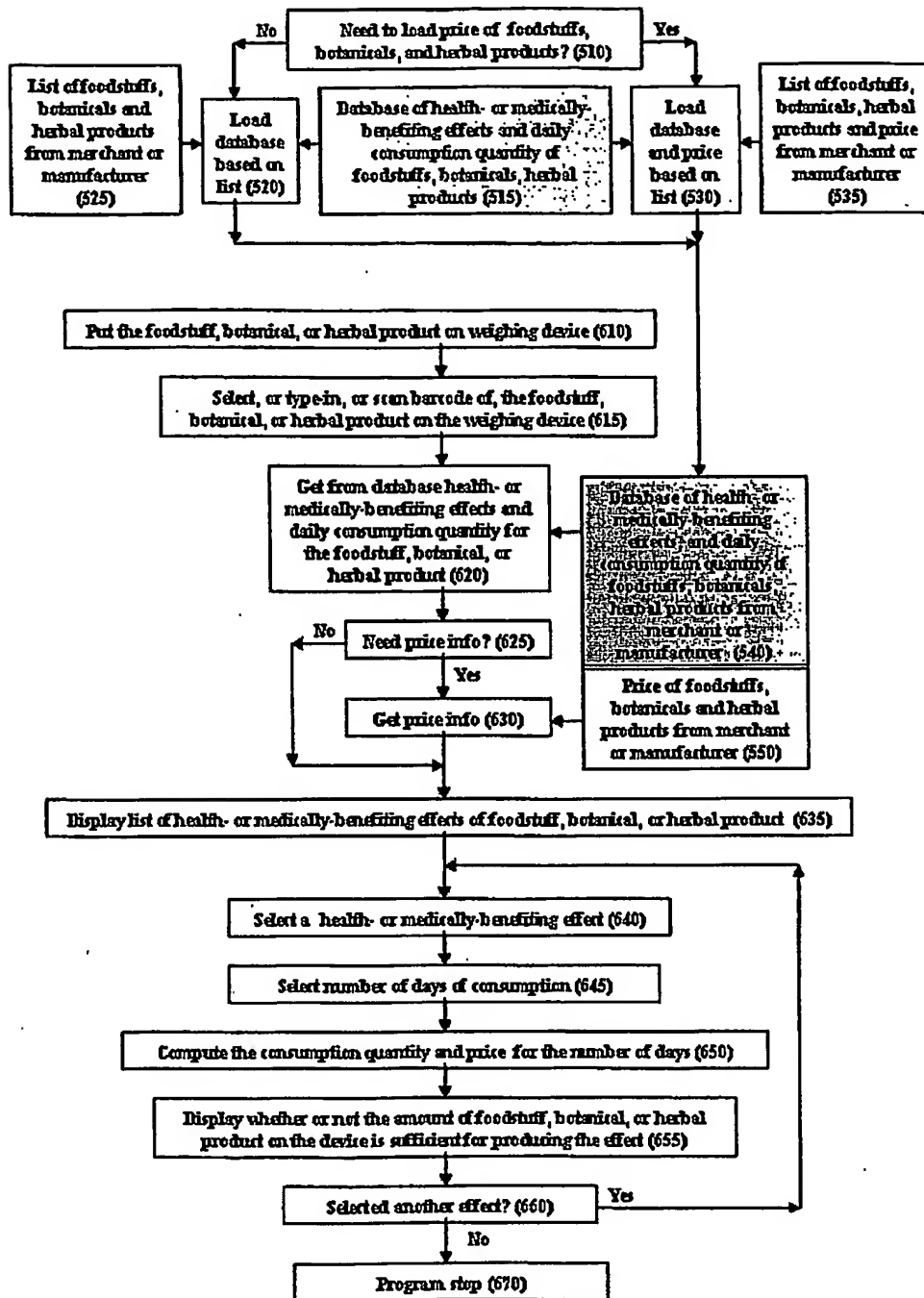


Figure 3. Flow Chart of a process of using an apparatus of this invention to enable consumers, merchants or manufacturers to use a weighing device to obtain information about whether or not the amount of a foodstuff, botanical, or herbal product on the device is sufficient to produce a selected health- or medically-benefiting effect.

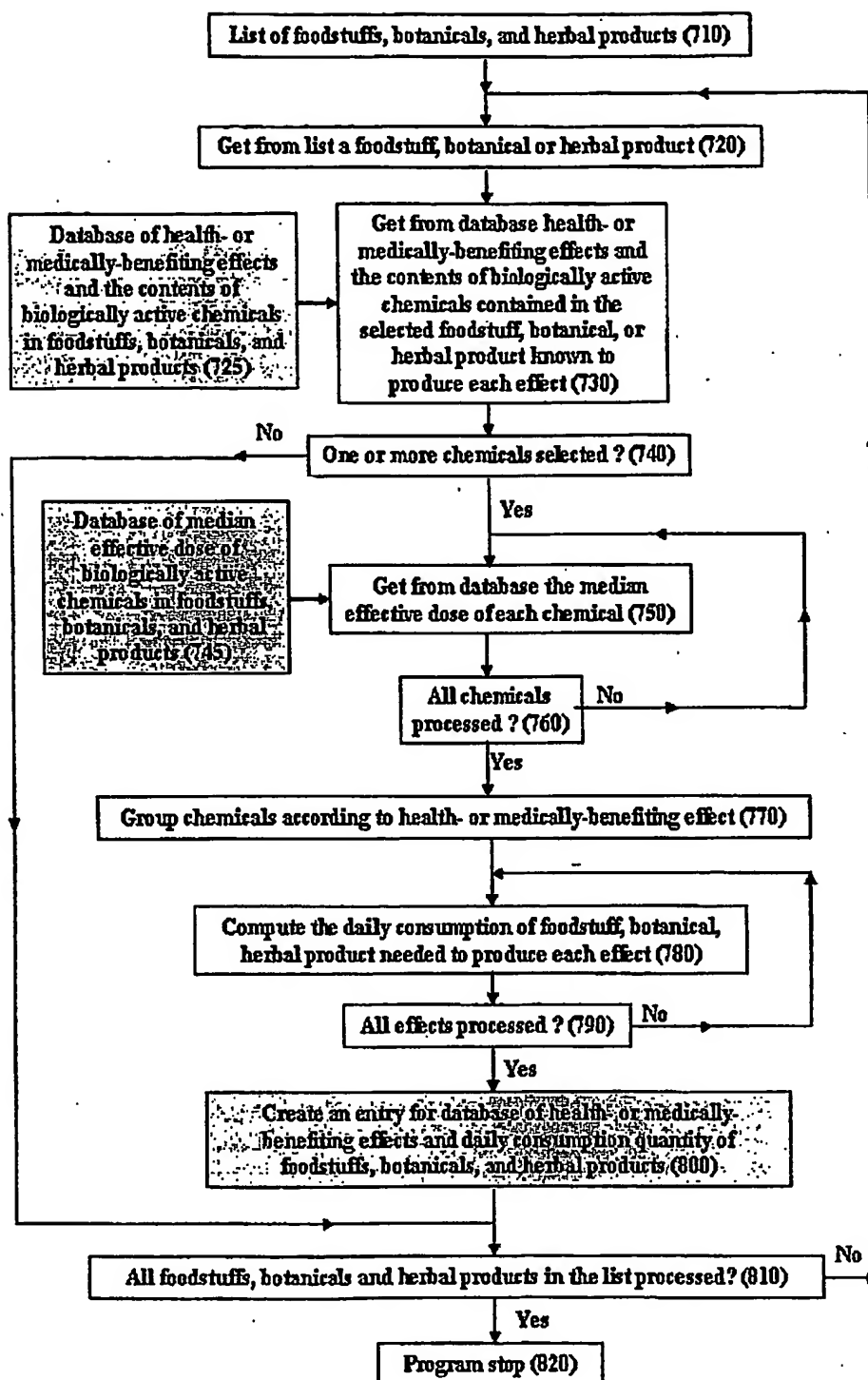


Figure 4. Flow chart of a process to generate a database of health- or medically-benefiting effects and daily consumption quantity of foodstuffs, botanicals, and herbal products

FBBC Consultant:

Foodstuff and Botanicals Benefit and Consumption Consultant

A database to provide information about the known health benefits of medicinal plants, foodstuffs, and botanicals. It also provides information on recommended consumption for foodstuffs, botanicals, and medicinal plants.

It is intended for use by health care providers, researchers, and the general public.

Field Name	Match Text
Foodstuff	<input type="text"/>
Botanicals	<input type="text"/>

Figure 5. The interface of the software, FBBC consultant, an apparatus contemplated by this invention.

FBBC Consultant:
Foodstuff and Botanicals Benefit and Consumption Consultant

Detailed Information	
Commodity	Tomato
Country of Origin	Godollo, Hungary
Production Method	Organic
Processing Method	None
Storage Method	Refrigerated
Benefits and Consumption	
Health Benefits	Rich in Vitamin C, Lycopene, and antioxidants.
Recommended Consumption	1-2 servings per day.
Preparation	Wash thoroughly, remove stem, and slice.
Storage	Store in a cool, dry place for up to 1 week.
Footnote	
Source: Food and Agriculture Organization (FAO) database.	

Figure 6. An illustrative example of the result for searching a vegetable "tomato" produced in Godollo, Hungary from the FBBC Consultant, an apparatus contemplated by this invention.

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Foodstuff and Botanical Ingredient and Content Database

The database is a comprehensive source of information on the chemical composition, physical properties, and biological activity of foodstuffs and botanical ingredients. It includes data on the source, processing, storage, and analysis of these materials. The database is designed to be a valuable resource for researchers, students, and professionals in the fields of food science, botany, and related disciplines.

Clicking on a parameter will lead to a search page.

Field Name	Match Text
Name of the substance	<input type="text"/>
Chemical structure	<input type="text"/>
Physical properties	<input type="text"/> Select
Biological activity	<input type="text"/> Select

Figure 7. The Interface of FBICD: a database of foodstuff and botanical ingredient and content, an apparatus contemplated by this invention

FBICD:

Foodstuff and Botanical Ingredient and Content Database

Detailed Information	
FBICD detailed Information	
Foodstuff name	Ginkgo biloba
Botanical name	Ginkgo biloba
Foodstuff code	Ginkgo biloba
Botanical code	Ginkgo biloba
Plant part	Leaves
Plant part code	Leaves
Plant part description	Ginkgo biloba leaves are the leaves of the Ginkgo biloba tree, which is a dioecious tree species. The leaves are fan-shaped and have a serrated margin. They are typically green in color and are used in traditional Chinese medicine for various purposes, including treating memory impairment and improving blood circulation.
Analysis method	HPLC
Compound class	Flavonoids
Compound name	Ginkgo flavonoids
Reference	Chen, J. et al. (2007) Ginkgo biloba leaves: A review of its pharmacology and clinical applications. <i>Journal of Traditional Chinese Medicine</i> , 27(1), 1-10.
Ingredients and Content	
Ingredient name	Content (mg/g)
Ginkgo biloba	10.0 mg/g
Ginkgo biloba	10.0 mg/g
Ginkgo biloba	10.0 mg/g
Ginkgo biloba	10.0 mg/g
Ginkgo biloba	10.0 mg/g

Figure 8. An illustrative example of the result for searching a herb "ginkgo" from the FBICD database, an apparatus contemplated by this invention.

EDC database:

Effective Dose of Chemicals

A database is provided in the form of a computer program which provides information on the effective dose of chemicals for a number of health and medical effects. It also contains a list of chemicals and their associated dose levels. Relevant references are provided.

Enter the chemical name:

Field Name	Match Text
Chemical Name	<input type="text"/>
Dose	<input type="text"/>
Health Effect	<input type="text"/>
Reference	<input type="text"/>

Figure 9. Interface of EDC database, a database of effective dose of chemicals, an apparatus contemplated by this invention

EDC database:
Effective Dose of Chemicals

Detailed Information	
Chemical Name	Cucurbitacin B
Section III	Chemical Structure
Chemical	
Source	Reference: [illegible]
Reference	Reference: [illegible]
Effective Dose	
Chemical	Minimum Effective Dose
Chemical	Chemical
Chemical	Chemical
Chemical	Chemical
Chemical	Chemical
Chemical	Chemical

Figure 10. An illustrative example of the result for searching a chemical "cucurbitacin B" from the EDC database, an apparatus contemplated by this invention.